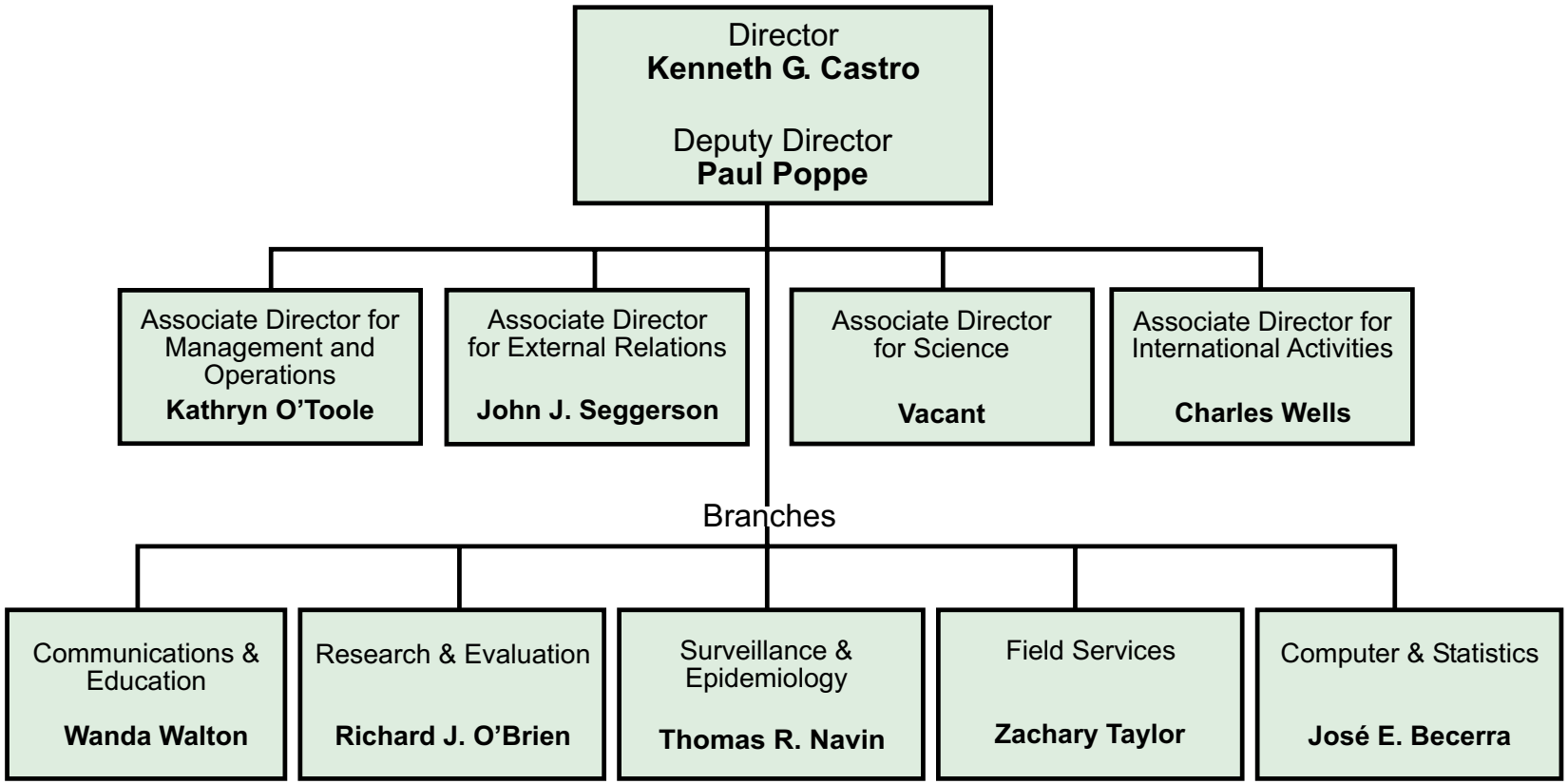
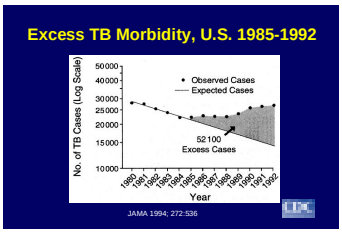
Division of Tuberculosis Elimination

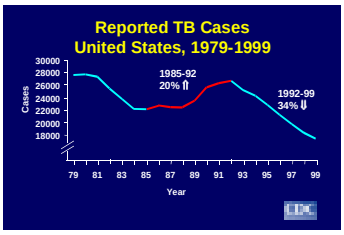


Tuberculosis Prevention, Control, and Elimination: Needs, Opportunities, and Challenges

Background: From 1985-1992, the nation experienced a resurgence of TB and a concurrent widespread occurrence of multidrug-resistant TB. The most important factor that set the stage for resurgence was the dismantling of TB services during the disappearance of categorical funds in the late 1970s and early 1980s. In response to the resurgence of TB, CDC developed and published the National Action Plan to Combat Multidrug-Resistant TB, and allocated new resources to implement action steps outlined in the plan, resulting in great strides in TB elimination. In 2000, a second plan, *Ending Neglect*, was developed by the Institute of Medicine (IOM) providing recommendations to further advance TB elimination.



Accomplishments:



- CDC developed and published the *National Action Plan to Combat Multidrug-Resistant TB*, and allocated new resources to begin the implementation of several action steps outlined in that plan. These new resources were quickly mobilized and led to: 1) improved identification of TB cases; 2) upgraded safe laboratories for early diagnosis and prompt identification of drug resistance; 3) improved routine and systematic drug susceptibility testing; 4) updated treatment recommendations; 5) implementation of broad-scale use of directly observed therapy as a tool to improve treatment completion; and 6) emphasis on the ongoing need for program evaluation.
- There was a 12% decline in TB cases from 1997 to 1999, despite a 16% decrease in federal funding*;
- There was a 34% reduction in TB mortality from 1992 to 1999, an all-time low;
- Updated guidelines were developed and published for targeted tuberculin skin testing and treatment of latent infection;
- Newly emphasized targeted testing and treatment programs were developed and implemented in 2000 — 15 programs were funded;
- Evaluation plan to measure results of the program in 2001 was developed;
- Outbreak response plan and surge capacity were developed, leading to an increased number of collaborations between states and CDC for initial rapid response to outbreaks;
- Ten new Public Health Advisors (PHAs) for TB control programs were recently hired. No PHAs had been recruited since 1993; and
- During the CDC/ATSDR Health Education Day celebration on November 2, 2000, the Communications and Education Branch (CEB) of DTBE was awarded the Public Health Education and Promotion Network (PHEP-Net) “Distinguished Health Education Program Award” for the Self-Study Modules on Tuberculosis. The Self-Study Modules on Tuberculosis consists of educational material in print, satellite, videotape, and Web-based formats; this variety of materials and mediums meets the different educational and training needs of our diverse target audience (outreach workers, public- and private-

*Funding trends based on adjusted 1990 US dollars.

Tuberculosis Prevention (continued)

sector nurses and physicians). Other awards received for these materials include the International Society for Performance Improvement Award; CDC Communicators Roundtable Award; and the International Health and Medical Media “Freddie” Award from the American Medical Association and Time, Inc.

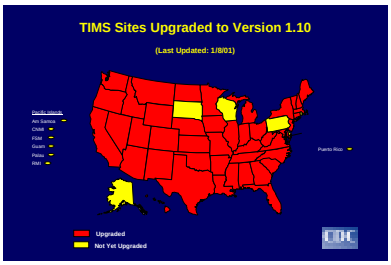
Challenges: To achieve the goal of TB elimination, it is crucial to:

- Maintain control of TB while adapting to a declining TB incidence and changing systems of health care financing and management;
- Respond to complex TB outbreak investigations with new methodologies;
- Accelerate the decline of TB and advance toward elimination through increased efforts related to targeted tuberculin skin testing and treatment of latent infection;
- Invest in research and development of new tools needed for the ultimate elimination of TB, new tests for TB diagnosis (particularly for diagnosis of infection), new treatments, and an effective vaccine;
- Increase U.S. involvement in global efforts to prevent, control, and eliminate tuberculosis; and
- Mobilize support for TB elimination and regularly measure progress toward that goal.

Tuberculosis Information Management System (TIMS)

Background: The Tuberculosis Information Management System (TIMS) is a Windows-based, client server application that assists health departments and other facilities in conducting TB surveys and managing TB patients.

Accomplishments:



- All 59 reporting areas are using TIMS at the central level for TB surveillance; smaller numbers (25 areas nationwide, with a total of 53 sites) are using TIMS for case management.
- In addition, 77 local sites in 15 reporting areas are using TIMS for surveillance purposes.
- Last year, TIMS version 1.1 was deployed; this version represents a substantial performance and functional improvement over previous releases.
- The vast majority of the reporting areas have been upgraded to TIMS version 1.1.
- The TIMS import utility is almost ready to be field tested.

Challenges: The need to manage, analyze, and synthesize TB information at the local, state, and national levels is critical. When information such as that managed by TIMS is transformed into organizational knowledge, TB control programs throughout the nation become empowered to perform organizational work. Plans include the following:

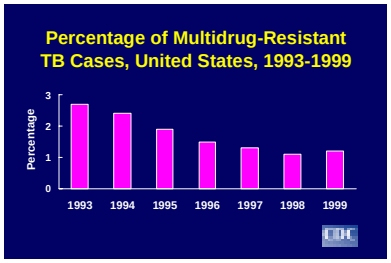
- Retool TIMS to become a Web-enabled application in accordance with new standards being developed by CDC as part of the National Electronic Disease Surveillance System (NEDSS).
- Train technical staff to build prototypes that would allow us to benchmark performance issues in key areas such as data entry validation rules on which TIMS is so heavily dependent.

Monitoring Progress Toward TB Elimination: National TB Surveillance

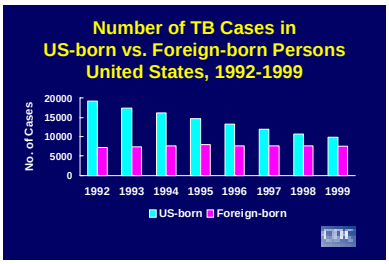
Background: The National Tuberculosis (TB) Surveillance System has provided fundamental data on the epidemiology of TB in the United States since 1953. The system collects basic demographic and clinical information and, since 1993, information on TB risk factors, drug resistance, and treatment.

Accomplishments: The National TB Surveillance System is a powerful tool for monitoring trends in TB. Following are some examples of ways the system has been used successfully:

- Reported TB Cases. There was a resurgence of TB in the late 1980s, which peaked in 1992. The system was critical in the early detection of the resurgence and provided the scientific basis for obtaining an increase in the resources that were required to control the epidemic. Since the peak in 1992, there have been steady annual declines.



- Multidrug-Resistant TB. The percentage of multidrug-resistant TB cases during 1993 to 1999 decreased from nearly 3% to 1%, representing an absolute decrease from nearly 500 MDR cases in 1993 to approximately 150 in each of the latter 2 years. The trends for both primary and acquired resistance, based on data from patients with no history of previous TB and those with a history of previous TB, respectively, were similar.



- Groups at Risk for TB. During the years 1992 to 1999, the number of cases in foreign-born persons remained at approximately 7,500 each year, whereas the number in U.S.-born persons substantially decreased from more than 19,000 in 1992 to less than 10,000 in 1999. The percentage of cases occurring in foreign-born persons during this period increased from approximately 25% to nearly 45% in 1999.

Challenges: To improve the ability to monitor progress toward TB elimination, we must meet the following challenges:

- The current level of support for the existing TB surveillance infrastructure must be maintained, if not increased;

- Capacity at state and local health departments to improve the accuracy and timeliness of surveillance systems and case counting mechanisms must be built; and

- New or improved indicators of our progress must be developed to supplement the systems currently in place.

Building DTBE's Outbreak Response Capability

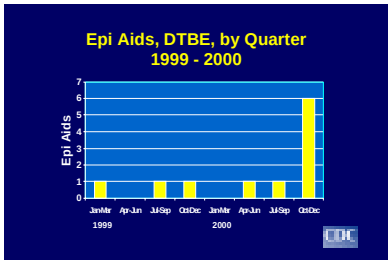
Background: To eliminate tuberculosis (TB), a rapid response to TB outbreaks is a crucial element for the Division of TB Elimination and our partners at state and local health departments. The Institute of Medicine (IOM) report, *Ending Neglect,* indicates that the health department infrastructure of many of our low-incidence states has deteriorated, leading to inadequate fiscal and human resources. Because of this, they have not been able to mount the appropriate effort to address outbreaks or unusual events of TB transmission.

Accomplishments:

- In February 2000, DTBE formed a planning committee to develop an outbreak response initiative that would optimize the timeliness and quality of the responses of both DTBE and the state and local health departments. The focus of the initiative was to help health departments discover, interrupt, and prevent TB transmission. The result was an outbreak response plan (ORP) that addresses the following key elements or needs: 1) increase the TB knowledge base; 2) evaluate program activities and effectiveness; 3) build expertise at health departments and DTBE; 4) provide training (EIS officers, state/local, DTBE); 5) conduct medium- and long-range interventions; 6) provide assistance in identifying resources for partners; 6) develop an accountable tracking system; and 7) assess the impact of outbreak responses (how to measure).

- Following the release of the IOM report, the IOM Outbreak Response Workgroup was formed to develop 1) an implementation plan for the ORP, 2) ways to improve detection of outbreaks, 3) guidelines for state and local health departments to respond to outbreaks and when to request outside help, and 4) an evaluation plan of our responses.

- From October through December 2000, DTBE responded to six requests for epidemiologic assistance, more than in the preceding seven quarters combined. The increased workload has required the following adjustments: 1) raise outbreak investigation efforts to the section level, 2) assign new staff, and 3) call on EIS officers outside DTBE to help increase our surge capacity.



Challenges: The epidemiology of TB is changing. Challenges include:

- An increasing proportion of cases are found in hard-to-reach populations, such as homeless or drug-addicted persons;

- The character of investigations has changed. Previous investigations focused on hospitals, prisons, and schools. Current investigations focus on places such as homeless shelters and crack houses; and

- There are more incidents of delayed or missed diagnosis due to declining clinical expertise.

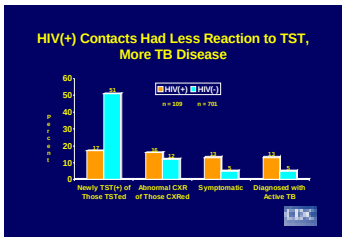
The Use of Contact Investigations to Prevent Tuberculosis Among Persons with HIV Infection

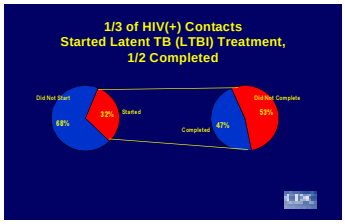
Background: Prevention of tuberculosis (TB) in persons with HIV remains an ongoing concern.

- HIV-positive persons comprise 10% of U.S. TB cases. Among 25- to 44-year-olds, they comprise 20% of cases, and 30% of the cases in New York City and Washington, DC.
- HIV infection remains the greatest known risk factor for active TB.
- An estimated 250,000 persons in the United States are unaware that they are HIV positive.
- TB contact investigation provides an opportunity to diagnose HIV, treat and prevent TB, and link HIV-positive persons to care.
- Preventing TB in HIV-positive persons through TB contact investigation is important to both AIDS prevention and TB elimination.

TB contact investigation provides the opportunity for 1) early identification of HIV and TB infection, 2) the prevention of active TB, and 3) access to needed health care and social services for a high-risk population that might not otherwise access services early or at all.

Accomplishments: CDC conducted a study that sampled over 1,000 infectious adult TB patients from 11 urban TB programs from July 1996 to June 1997. Significant findings included:





- 87% of 6,225 close contacts had unknown HIV status. Of the 810 with a known status, 109 (13%) were HIV positive.
- HIV-positive contacts were not fully evaluated for TB infection, 17% did not receive an initial TB skin test, 28% did not receive a chest x-ray, and 8% received neither a TB skin test nor a chest x-ray.
- HIV-positive contacts had less reaction to TB skin tests and more TB disease; 13% of HIV-positive contacts were identified with active TB, compared with 5% of HIV-negative contacts.
- Of those without TB disease, one-third of HIV-positive contacts began treatment of latent TB infection (LTBI); one-half of those persons completed the treatment.

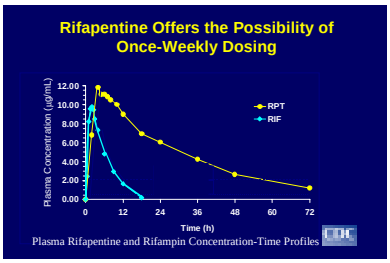
Challenges: TB and HIV providers should be aware that HIV-positive contacts have an extraordinary risk for active TB, and should collaborate to promptly recognize and treat these contacts by:

- Offering HIV voluntary counseling and testing to all close contacts early in medical evaluation;
- Fully evaluating HIV-positive contacts for TB infection and disease using TB skin testing, symptom screening, chest radiography, and sputum exam if there are symptoms or an abnormal chest x-ray;
- Starting treatment for LTBI regardless of TB skin test results, age, or history of previous LTBI treatment for HIV-positive contacts without active TB;
- Facilitating TB treatment adherence using a two-month regimen of rifampin (or rifabutin)/pyrazinamide, directly observed therapy, and incentives or enablers (housing, food, transport); and
- Linking HIV-positive contacts to needed medical and social services.

Investigation of Improved Treatment Regimens for Active TB

Background: Present treatment regimens for active TB are highly effective but very long and labor-intensive. Directly observed therapy (DOT) using the standard twice-weekly regimen requires at least 58 contacts between patient and health care worker (HCW) over a period of six months. Similar challenges confront our current therapies for latent TB infection (LTBI).

Accomplishments: Among new agents with activity against *M. tuberculosis*, the one that is furthest along in development and that has been tested in phase III clinical trials is rifapentine, a rifamycin derivative with a serum half life that is five times greater than that of rifampin, allowing for its use in regimens that are administered only once weekly. These regimens would reduce by over 30% the number of DOT visits that are needed to complete a full course of TB treatment.



TB Trials Consortium (TBTC) Study 22 is a randomized, open-label clinical trial that compared the safety and efficacy of a once-weekly isoniazid and rifapentine regimen with the standard twice-weekly isoniazid and rifampin regimen during the continuation phase of therapy for pulmonary TB. All study patients were followed for 24 months after the end of therapy to assess the occurrence of relapse.

Analysis of Study 22 data demonstrated the following:

- TB treatment with once-weekly isoniazid and rifapentine is equally as safe as, but somewhat less efficacious than, treatment with twice-weekly isoniazid and rifampin (relative risk of failure/relapse 1.66 [crude]; 1.30 [adjusted]).

- Using either treatment regimen, the risk of failure/relapse was low among HIV-negative persons with noncavitary disease. Thus, it is possible to use the once-weekly isoniazid and rifapentine regimen with confidence in such low-risk TB patients, a group that represents up to 45% of pulmonary TB patients seen in the United States.

- Even under optimal conditions with full DOT, the currently recommended standard regimen for TB treatment (twice-weekly isoniazid and rifampin) has a high rate of failure/relapse for some patients.

Recommendations for how to use rifapentine in the treatment of TB will be incorporated into the new ATS/CDC/IDSA guidelines that will be issued this year. Study 22 findings will also be used to update recommendations regarding standard therapy with rifampin-based regimens for high-risk TB patients.

The role of rifapentine in TB therapy continues to be better defined by the TBTC. We are presently concluding analyses of a pharmacokinetics/pharmacogenetics substudy (TBTC Study 22 PK) and of a dose-escalation study (TBTC Study 25) of rifapentine.

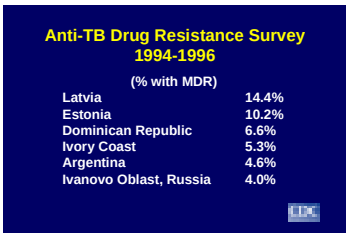
Challenges:

- Comprehensive analyses of data from this ongoing study are needed to fully define the role of this promising new drug; and

- Rifapentine will also be evaluated as an agent for the prevention of active TB in a prophylaxis trial that will compare the standard LTBI regimen (9 months-270 doses of isoniazid) with a 3-month/12-dose regimen of isoniazid and rifapentine. This study (TBTC Study 26) will begin in Spring 2001. Its required sample size of 8,000 patients will require expansion of the TB Trials Consortium beyond its current capacity.

Treatment and Management of Multidrug-Resistant (MDR) TB in Latvia

Background: Following the disintegration of the Soviet Union in 1991, Latvia, like many former Soviet Republics, faced substantially depleted resources for tuberculosis (TB) control. The supply of anti-TB drugs became erratic and unreliable, treatment regimens were poor and outdated, and treatment-completion rates, as a rule, were poor. Institutional infection control was also poor and, as a result, high levels of TB transmission were occurring in prisons and hospitals with high numbers of staff developing TB and multidrug-resistant (MDR) TB. Additionally, there were major delays in diagnosing drug resistance due to poor laboratory proficiency.



Accomplishments: The initial steps taken by the Latvian National TB Program were modeled on the response in the United States to the MDR TB epidemic in New York City and other areas in the early 1990s.

- To strengthen their basic TB program, Latvians began by implementing the World Health Organization (WHO)–defined directly observed treatment, short-course (DOTS) strategy by the end of 1996. Under the technical guidance of Sweden, national laboratory proficiency and capacity were improved. The national surveillance system was improved by the adoption of WHO reporting standards and by computerization. With guidance from CDC, they also began to address infection control issues in hospitals.

- To manage the existing MDR TB burden, Latvians started a civilian and prison DOTS-plus program in 1998 to treat the roughly 200 MDR TB patients diagnosed each year. These efforts resulted in a 30% reduction of the level of MDR TB in Latvia by 1998.

- CDC will serve a role in the Gates Foundation–supported large collaborative MDR TB project between CDC, WHO, Partners in Health/Harvard, and the Task Force for Infant and Childhood Survival, based in Peru. This project will focus on establishing a viable and sustainable model for managing MDR TB in the setting of a resource-limited country with high TB prevalence.

Challenges:

- Additional resources will be required to develop the Latvian Center of Excellence as a sustainable training resource for MDR TB in the region;

- Further expansion of training capabilities is needed to meet the growing demand of TB programs;

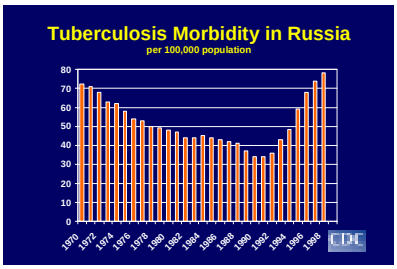
- Additional rapid diagnostic technologies must be studied. The cost-effectiveness analysis of these technologies is critical to determining what will be feasible for use in resource-poor countries such as Latvia;

- Infection control efforts must be broadened to include smaller regional TB facilities, clinics, and prison facilities within Latvia. These measures will serve as a model for TB infection control for the region; and

- Effective approaches and strategies for managing alcohol-addicted patients and patients who interrupt treatment must be pursued.

Improving TB Control in Russia

Background: Why is CDC involved in TB control in Russia?



- Tuberculosis (TB) morbidity had been declining in Russia from the early 1970s until the collapse of the Soviet Union in 1991. Since that time, it has nearly doubled, to 80 cases per 100,000 by the end of 1998. In one of the Russian project sites, Ivanovo, the incidence of primary multidrug-resistant (MDR) TB had risen from 3.8% in 1996 to 8.9%.
- Russia has been targeted as one of the countries contributing to the world's TB burden by the Stop TB Initiative and the World Health Organization (WHO), and is a "hot spot" for MDR TB worldwide.

Accomplishments: In March 1999, CDC, in collaboration with WHO, the Russian Ministry of Health, the Central Tuberculosis Research Institute (CTRI), the U.S. Agency for International Development (USAID), and others working on TB in Russia, began focusing on controlling the epidemic in three pilot areas. The project is focused on developing new strategies for dealing with TB and MDR TB, developing laboratory capacity, and developing surveillance systems in both the prison and general population of three oblasts. CDC has been heavily involved in providing technical assistance to WHO and to the World Bank for the development of its TB project proposal for Russia, including the following:

- CDC conducted two epidemiologic assessments in Ivanovo in February and August 1999, which resulted in a restructuring of the Ivanovo project; a focus on directly observed treatment, short-course (DOTS), i.e., strengthening the basic TB control services; and a postponement of implementing DOTS-plus (treatment of MDR TB).
- In 1999, CDC sent three Public Health Advisors (PHAs) on temporary assignments to Moscow, Orel, and Ivanovo, which led to the first draft of a WHO/CDC/USAID/CTRI protocol for TB demonstration projects, completion of a risk-factor study for MDR TB in Ivanovo, and the initiation of the DOTS project in Orel.
- CDC has launched DOTS projects in Orel, Ivanovo, and Vladimir with the intent to develop models for TB control in other parts of the former Soviet Union.
- In 2000, CDC sent two PHAs on temporary assignments to Ivanovo and Vladimir, which led to the development of a draft protocol for case management in Ivanovo and the initiation of the DOTS project in Vladimir.
- A revised TB protocol was completed in June 2000, taking into account extensive comments from Russian and other international colleagues, which included a modified re-treatment regimen. This protocol was widely publicized, and has become a template for World Bank–supported TB projects.
- CDC has participated in extensive laboratory assessments in all project areas and continues working on laboratory upgrading, training, and quality assurance with major input from NCID/DASTLR.
- CDC has continuously worked with Russian colleagues and WHO to revise and upgrade their nationwide surveillance system.
- DOTS performance outcomes have begun to improve in the Ivanovo Oblast due to intensive supervision and the implementation of patient incentives and enablers.
- The Orel Oblast project is considered an early success with estimated completion rates over 83%.

Challenges:

- The number of Russian prisoners with active pulmonary TB has remarkably increased during 1992 to 1999, with TB overflowing into the civilian sector;
- HIV prevention efforts need to be increased among populations at risk for TB;
- WHO district-level training modules must be revised. This will become the basis for training health care workers in Russia;
- Drug-resistance surveillance needs to be expanded to the three project areas to quantify the drug-resistance problem;
- Laboratory upgrading and quality assurance must be sustained;
- Nosocomial/institutional TB prevention needs to be addressed; and
- Modern methods for rapid culture and drug susceptibility testing in our project sites need to be investigated, and persons with MDR TB will need DOTS-plus access in Orel, Ivanovo and eventually Vladimir.

Key Research Findings

Tuberculosis Among Foreign-born Persons in the United States, 1993-1998

Immigration has contributed substantially to changes in TB epidemiology in the United States during the last decade and is considered an important factor in the resurgence of TB during the late 1980s and early 1990s. Although the number of reported cases of TB has decreased steadily since the peak of the resurgence in 1992, the decline has been limited to persons born in the United States. To highlight national trends in characteristics of foreign-born TB patients and the potential implications for TB program planning and policy development, data from the national TB surveillance system were analyzed. During the study period of 1993 through 1998, the proportion of U.S. cases that were in foreign-born persons increased from 29.8% to 41.6%. The TB case rate was 32.9 per 100,000 population in foreign-born persons during this period compared with 5.8 per 100,000 in U.S.-born persons. Six states reported nearly 75% of cases in foreign-born persons. Approximately two-thirds of foreign-born persons with TB were originally from Mexico, the Philippines, Vietnam, India, China, Haiti, and South Korea. Among those for whom the date of U.S. entry was known, more than 50% arrived five years or less prior to the diagnosis of TB. The authors conclude that continued efforts to tailor local TB control strategies to the foreign-born community and commitment to the global TB battle are essential.

Talbot EA, Moore M, McCray E, Binkin NJ. Tuberculosis among foreign-born persons in the United States, 1993-1998. *Journal of the American Medical Association* 2000;284:2894-2900.

TBTC Study 22

- **Study 22 is a TB clinical trial evaluating the efficacy and safety of a once-weekly regimen of isoniazid and the new drug rifapentine (HP1)** compared to standard twice-weekly INH and rifampin (HR2) in the four-month continuation phase of therapy for drug-sensitive pulmonary TB. The new regimen reduces DOT by 30%. The trial was conducted by the TB Trials Consortium (TBTC), a CDC-funded consortium of clinical investigators.

- In May 1999, these investigators published the first experience with the use of rifapentine in HIV-positive persons with TB. Five of 30 patients on HP1 relapsed, compared to three of 31 in the HR2 group. **Four of five HIV-positive relapses in the HP1 group had acquired rifamycin monoresistance.**

- Study 22 randomized 502 HIV-negative patients to each regimen. Failure/relapse was moderately higher in patients on the HP1 regimen (crude rates 9.6% vs 5.8%; relative risk 1.66 [95% CI 1.06-2.58]). Significant risk factors for treatment failure or relapse included having a positive sputum culture at two months, and presence of cavitation on chest. Patients with either risk factor had a four to five times greater risk of adverse outcome in both arms. There was no acquired rifamycin monoresistance in the HP1 arm.

- **Study 22 found that the new regimen of once-weekly isoniazid and rifapentine may be used effectively in low-risk HIV-negative patients, who comprise almost 50% of HIV-negative TB patients**. **Study 22 also demonstrated that high-risk HIV-negative patients are presently often undertreated, even with accepted standard therapies.**

1. Vernon AA, Burman W, Benator D, Khan A, Bozeman L, et al. Acquired rifamycin monoresistance in patients with HIV-related tuberculosis treated with once-weekly rifapentine and isoniazid. *Lancet* 1999; 353:1843-1847.

2. Vernon AA, for the TB Trials Consortium. TBTC Study 22 (Rifapentine Trial): preliminary results in HIV-negative patients. [abstract]. *American Journal of Respiratory and Critical Care Medicine* 2000; 161(suppl):A252.

3. Catanzaro A and Horsburgh R, for the TB Trials Consortium. TBTC Study 22: risk factors for relapse with once-weekly isoniazid/rifapentine (HP) in HIV-negative TB patients. [abstract]. *American Journal of Respiratory and Critical Care Medicine* 2000;161(suppl):A252.

4. Gordin F and Chaisson R, for the TB Trials Consortium. TBTC Study 22: risk factors for relapse with twice-weekly isoniazid/rifampin (HR) in HIV-negative TB patients. [abstract]. *American Journal of Respiratory and Critical Care Medicine* 2000;161(suppl):A252.

(Manuscripts derived from 2, 3, and 4 are currently under revision.)

U.S. - Mexico Border TB Control Recommendations

In order to develop specific strategies to meet the challenges of TB control and case management in the American states bordering Mexico, the Division of Tuberculosis Elimination convened a working group of TB-control officials from the border states affected. The deliberations of this working group can be found in the *Recommendations and Reports (R&R)* issue of the *Morbidity and Mortality Weekly Report (MMWR)* published January 19, 2001. The recommendations outline steps that local, state, and federal TB programs can take to improve TB prevention and control in border areas for four main topics:

- Surveillance, which may include a binational case registry and a uniform case definition to enable standardized data collection and increase accuracy in data analyses.
- Case management and therapy completion, which includes addressing the complexity of case management across international borders.
- Performance indicators, which should include targeted TB testing among border populations, linkage of laboratory data regarding binational TB patients diagnosed in Mexico, and evaluation to facilitate the most effective means of contact tracing.
- Research, to address the needs of binational patients and their close contacts, and patients who acquired TB in Mexico or Central America and their contacts in the United States. Research findings should be used to develop strategies for active case finding as well as for targeted testing and treatment of populations at risk for TB infection, and promotion of regional TB control efforts along the U.S.-Mexico border.

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The Use of Contact Investigation to Prevent TB Among Persons with HIV Infection

HIV infection is the greatest known risk factor for developing active TB. Based on state health department comparisons of TB and HIV registries, it is estimated that TB cases with HIV coinfection comprise approximately 10% of U.S. TB cases. Investigating the contacts of infectious TB patients is important to both AIDS prevention and TB elimination since it provides an opportunity to diagnose HIV, treat and prevent TB, and link HIV-positive contacts to care. This study sampled over 1,000 infectious adult TB patients at 11 urban sites and examined their close contacts (6,225). Few contacts (13%) had known HIV status, but certain groups were more likely to have unknown HIV status: U.S.-born persons, non-white persons, children, and females. Of those contacts with known HIV status, 28% had no documentation of receiving a chest radiograph as part of the medical evaluation for active TB. Thirteen percent of HIV-positive contacts had active TB, compared with 5% of HIV-negative contacts. Of HIV-positive contacts with TB infection but no TB disease, only one-third started treatment for latent TB infection (LTBI) to prevent progression to disease, and only one-half of those completed treatment. Because TB contact investigation provides an opportunity for

early identification and prevention of active TB disease, TB and HIV providers should collaborate to offer voluntary HIV counseling and testing to all close contacts early in the medical evaluation process; and to fully evaluate and treat HIV-positive contacts.

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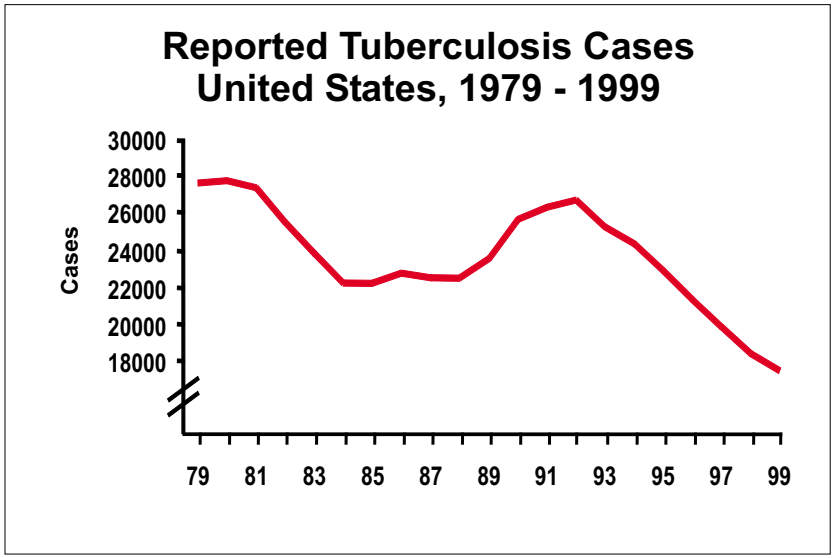
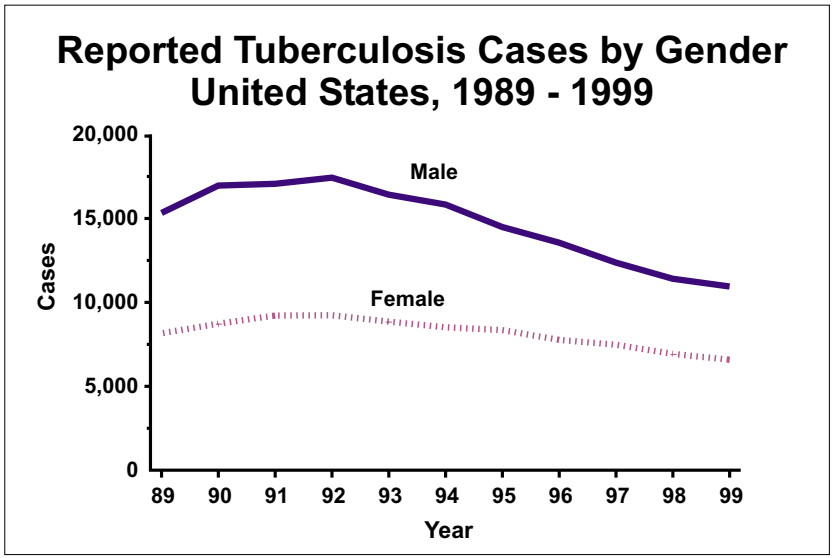


	Cases
79	27,669
80	27,749
81	27,373
82	25,520
83	23,846
84	22,255
85	22,201
86	22,768
87	22,517
88	22,436
89	23,495
90	25,701
91	26,283
92	26,673
93	25,287
94	24,361
95	22,860
96	21,337
97	19,851
98	18,361
99	17,531



	Male	Female
89	15,334	8,158
90	16,966	8,729
91	17,069	9,214
92	17,433	9,236
93	16,423	8,854
94	15,833	8,517
95	14,494	8,348
96	13,560	7,765
97	12,371	7,474
98	11,413	6,935
99	10,948	6,582